



ITEK CORPORATION - 10 MAGUIRE ROAD

LEXINGTON 73 MASSACHUSETTS - VOLUNTEER 2-6200

July 27, 1965

Mr. T. Nelson
System Consultant
Box 32
Schooley Mountain
New Jersey

Dear Mr. Nelson:

In response to your inquiry concerning the MCP System, the enclosed brochure should serve as an introduction to this unique data storage, retrieval and processing system.

If you have further specific questions concerning the possible application of the MCP Memory or Processing Systems to your data operations, your further inquiries will receive our prompt attention.

Very truly yours,

Itek Corporation
Digital Data Systems Division

A handwritten signature in blue ink, appearing to read "JDBragg".

J. D. Bragg
Manager Equipment Marketing

JDB:dew
Enclosure



Itek / TECHNICAL BULLETIN

MCP-1000 SYSTEMS

MCP-1000 SYSTEMS

The MCP-1000 line of equipment was developed to help solve problems in which reference to files and logical manipulation of stored data are the primary requirements. The line consists of storage and searching units which can be combined in various ways to carry out functions ranging from the readout of digital archives to global war gaming.

A disc reader alone (with an interface to any computer) gives fast random access to 75 million characters with ultrafast readout. Changing three discs, which can be done by hand in seconds, makes available a new 75-million-character file. At the other extreme, MCP-1000 units can be combined into a memory centered processing system with automatic access to more than a trillion bits (150 billion characters) of information.

- 
- MCP-1012 Photostore Library
 - MCP-1012A Auxiliary Tray Unit
 - MCP-200 Disc Reader
 - MCP-210 Disc Writer
 - MCP-1A Photostore Control Unit

Itek

Itek Corporation
10 MAGUIRE ROAD, LEXINGTON 73, MASSACHUSETTS

MCP-200 DISC READER

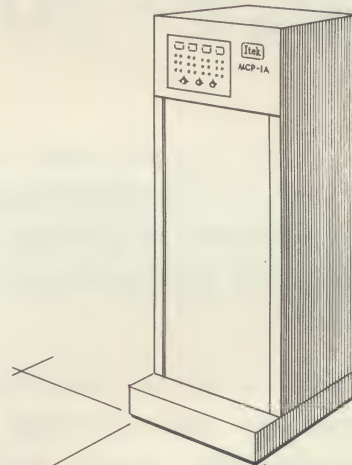
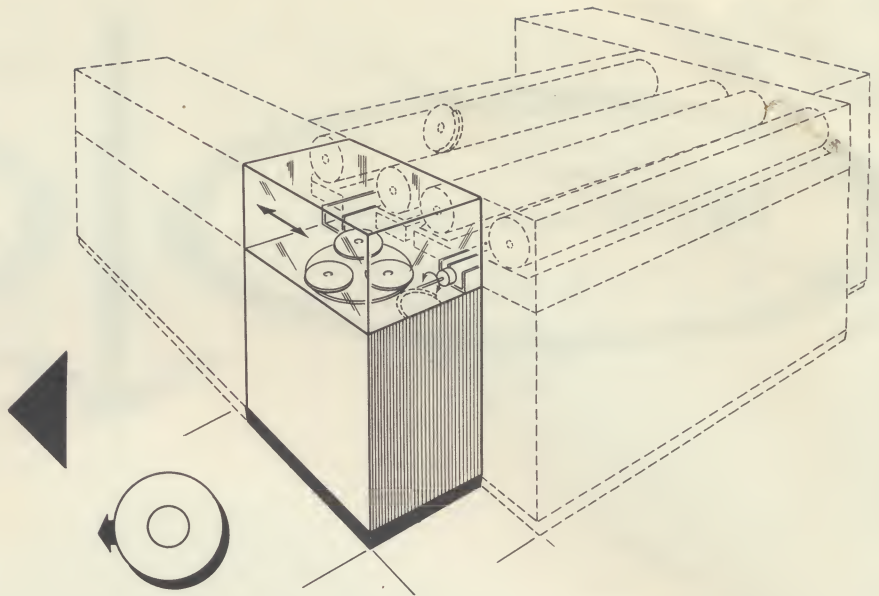
Three 25-million-character photostore discs are available on the Disc Reader turntable. Discs are brought to the read station by 120-degree rotation of the three-disc turntable.

Discs may be mounted on the turntable manually, or placed on it and retrieved by the automatic pickers of the MCP-1012 Photostore Library. When used with the Photostore Library, the turntable generally holds two discs "in queue" while the third disc is being read.

The Disc Reader reaches any piece of information on the 3,100 tracks (per disc) within 33 milliseconds. Average access is 15 milliseconds for directly addressed data access. Track reader positioning is maintained by a closed loop servo-train in which a microscope objective lens and flying spot scanner operate together. Thus, close positioning tolerances are circumvented, permitting very high track skipping rates.

Discs rotate under the reader at 4,600 revolutions per minute, and, with over 67,000 bits per track, a data input transfer rate in excess of 4 million bits (667,000 characters) per second is realized, including allowance for 20 percent error code bits.

A liberal error checkcoding system permits extensive data regenerating capability, which, combined with an error expectancy of less than 1 bit in 10 million, provides a reliability some orders of magnitude better than in existing data handling systems.

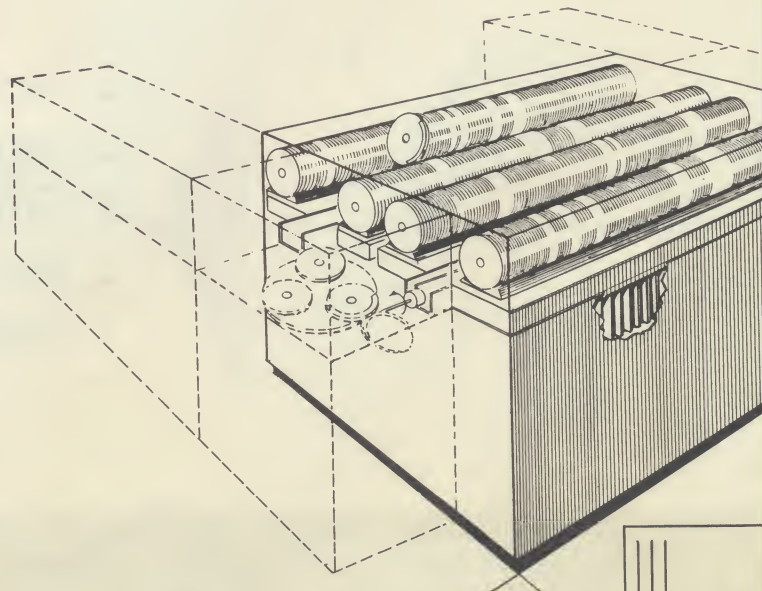


MCP-1A PHOTOSTORE CONTROL UNIT

To fully utilize an MCP-1012 Photostore Mass Memory Subsystem on-line with a large or medium scale digital computer, the MCP-1A Photostore Control Unit is provided. The Photostore Control Unit consists of an interface section which communicates with the central computer, a command queue and data buffer, and the MCP-1012 Search Control Logic.

The Photostore Control Unit accepts data requests (disc, track, data ID) from the computer in the same basic form as a magnetic tape read or write command. The required data is formatted for recording or is read and tape formatted for computer delivery. Actual disc retrieval and data location are performed without computer interruption. Data transmission into (or from) the computer can be at rates up to one-half million characters per second from the Photostore Control Unit buffer to computer memory. Any character codes, sizes, and word formats are accommodated by the MCP-1A. A simple field adjustment suffices to convert it from an interface for computer A to work with computer B.

An Inquiry Control option permits the interjection of file inquiries via the MCP-1A without any interruption of the computer.



MCP-210 DISC WRITER

Utilizing a laser beam as a source of high energy light and a high speed polarity modulator as a shutter, the MCP-210 attains writing speeds of 500,000 bits per second in 3,100 tracks (25 million characters).

The MCP-210 includes a programmable counter which imprints a disc serial number on each new disc blank. This number is immediately recorded on the first data track, providing an automatic numeric labeling function.

In addition to comprehensive parity and error correction coding of characters, a photomultiplier and logic perform a bit-by-bit check of all recording as it occurs—a read-while-write check.

As writing is terminated, each disc is placed in the developer, where the data is fixed in a matter of minutes. The disc is then retrieved for permanent or semipermanent storage, or is transferred to the MCP-200 Disc Reader for use.

Writing is permanent and noterasable within the system, and the Photostore data is of archival permanence and quality. Each information bit is represented by two bit spots, one clear and the other dark. The sequence of clear and dark spots in pairs determines binary 1's and 0's. One border of a data track is clear, the other dark. This identification permits closed loop servoing by the Disc Reader and eliminates close tolerancing of concentricity of tracks. Thirty-one hundred tracks are recorded on a 1-inch annulus at the outer edge of the 10-inch-diameter discs.

MCP-1012 PHOTOSTORE LIBRARY

Photostore discs of 25-million-character capacity are stored in either of two (expandable to eight) 600-slot trays. Storage density is 10 discs per inch. Each tray consists of self-interlocking subtrays of 50-disc capacity. If the need arises, subtrays may be removed or inserted manually.

By the addition of auxiliary disc banks (MCP-1012A), the number of discs can be multiplied and the maximum capacity of more than a trillion bits, or 150 billion characters, can be achieved.

Each tray pair is serviced by a picker traveling between the two trays. The picker photoelectrically selects the disc slot into which a disc is to be stored or from which a disc is to be extracted. Photosensing of slots permits extremely rapid movement of the picker without position tolerancing restrictions. Access to any disc is possible in seconds from command issuance to data reading.

ILLUSTRATIVE APPLICATIONS AND CONFIGURATIONS

LANGUAGE TRANSLATION

The MCP-1000 systems were designed with the characteristic requirements of language translation in mind. Russian to English and Chinese to English translation are accomplished on a new basic principle which not only multiplies the translation rate but results in a new order of completeness, minimal post editing, and nearly full resolution of ambiguities.

ARCHIVES

The quality and permanence of photodisc recording coupled with the extremely high data density offer unexcelled storage of archival documentation which requires no "exercising" and which can not be degaussed. Program and data libraries on photodiscs require no audit control against loss or change.

REFERRAL AND FILE EXTRACTION

Ability to address data by content or meaning makes it possible to enter uncataloged files to extract all or selected data pertaining to any subject field. Similarity, as well as exact matching, can control extraction, based upon numeric or alphabetic material.

MULTIACCESS CONTROL

Interfaced with a powerful arithmetic computer, the MCP-1000 systems aid scheduling control, send programs and data sets as subroutine problems, and receive and record results. Data-linked to remote subsystems, this configuration allows multi-installation use of a single data system.

INVENTORY CONTROL AND BILL OF MATERIALS

Any bill of material may be generated from consolidated parts and materials lists, permitting single pass inventory updating and scheduling. Production and spares requirements are automatically separable, although carried together.

GENERAL ACCOUNTING

Due to its vast on-line data capacity, consolidated accounting is available. Accounts receivable, sales, and scheduling can be integrated. Payroll, cost analysis, and accounts payable are also related, permitting a new significance in management documentation and strategy techniques.

INSURANCE PROCESSING

The capacity and random access of the MCP-1000 Systems permit data-link real-time enquiry operations from remote offices, multiplexed data acceptance and transmission, and complete cross indexing among policy files. Enquiries may be complete or fragmentary. Data density and permanence permit maintenance of on-site archives.

SCIENCE STATISTICS

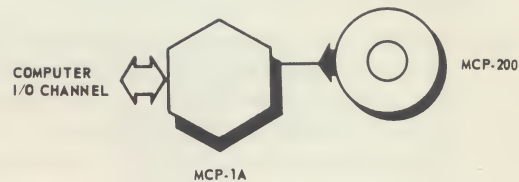
Linear programming, von Neumann projections, and correlation utilizing massive samples are enhanced by the capacity and flexible data access of the MCP-1000 Systems on-line with an arithmetic computer.



ARCHIVAL AND DATA EXTRACTION SYSTEM, READ ONLY

Units: MCP-200, MCP-1A

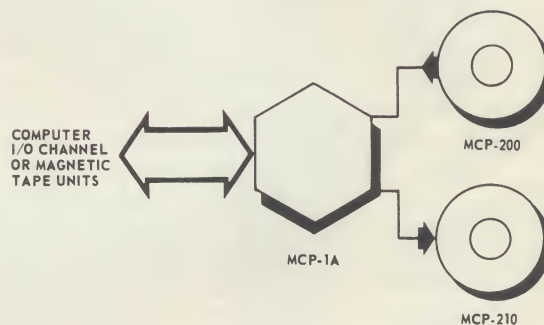
The MCP-1009 systems provide read only access to as many as 600 million data bits used for program or data storage and retrieval. The Itek Information Processing Center in New York City is equipped to convert permanent files to discs for use with this peripheral system. Manual changing of discs (in about 1 minute) is equivalent to mounting two reels of magnetic tape while other discs are being read by the MCP-200.



ARCHIVAL AND DATA EXTRACTION SYSTEM, COMPLETE

Units: MCP-200, MCP-210, MCP-1A

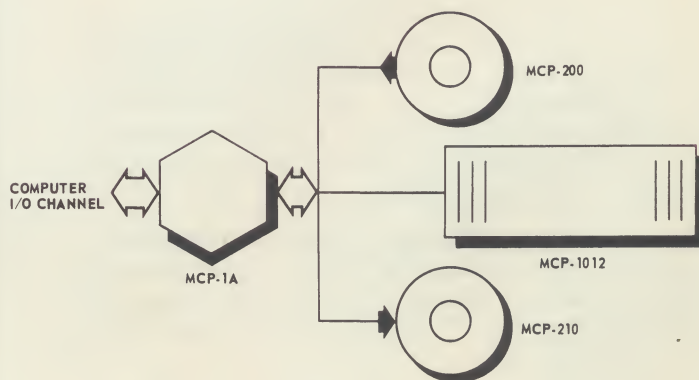
This minimum configuration permits on-line or off-line use of the Photostore data units for recording data in archival quality, such as library catalogs, dormant permanent records, analog and digital experimental data in copious quantities. Space reduction of over 100 to 1 is achieved compared with magnetic tape libraries, and discs may be read at any later date for reference or verification.



DATA LIBRARY SUBSYSTEM

Units: MCP-1012, MCP-200, MCP-210, MCP-1A

This subsystem, operating on-line with a digital computer, provides the data storage, retrieval, and archival capabilities of the complete MCP-1000 System to existing computer installations. Comprehensive searching functions permit addressing by data content and indirect table look-up without complex programming.



For further information contact:
Itek Corporation
Digital Data Systems Division
Equipment Marketing Manager
Telephone: 617-862-6200

Itek

Itek Corporation
10 MAGUIRE ROAD, LEXINGTON 73, MASSACHUSETTS